[15] **Claims**

What is claimed is:

[16] 1. A pipette comprising:

- a pipette tip ejector axially movable with respect to a pipette tip mounting shaft,
- the pipette tip mounting shaft comprising:
    - a first conically tapered sealing zone, the first sealing zone comprising
        - a narrow end with an outer diameter of 0.11 to 0.13 inches,
        - a wide end with an outer diameter of 0.15 to 0.19 inches;
        - and being 0.15 to 0.20 in. long, to thereby form a tapered at an angle of 84 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;
    - a second conically tapered sealing zone, the second sealing zone being coaxial with the first sealing zone and comprising
        - a narrow end with an outer diameter of 0.20 to 0.21 inches,
        - a wide end with an outer diameter of 0.22 to 0.23 inches;
        - and being 0.53 to 0.63 in. long, to thereby form a tapered at an angle of 86 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;
    - a first annular pipette tip stop between and abutting and being coaxial with the first and second sealing zones, and further:
        - being substantially perpendicular to the axis defining the first and second conically tapered sealing zones; and

- having an inner diameter equal to the wide end of the first sealing zone and an outer diameter equal to the narrow end of the second sealing zone;

- a second annual pipette tip stop abutting the second sealing zone, the second stop:

  - being perpendicular to the axis defining the first and second conically tapered sealing zones,

  - having an inner diameter equal to the wide end of the second sealing zone.

2. A pipette comprising:

- a pipette tip ejector axially movable with respect to a pipette tip mounting shaft,

- the pipette tip mounting shaft comprising:

  - a first conically tapered sealing zone, the first sealing zone comprising

    - a narrow end with an outer diameter of 0.18 to 0.20 inches,

    - a wide end with an outer diameter of 0.20 to 0.22 inches;

    - and being 0.10 to 0.15 in. long, to thereby form a tapered at an angle of 84 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;

  - a second conically tapered sealing zone, the second sealing zone being coaxial with the first sealing zone and comprising

    - a narrow end with an outer diameter of .22 to .24 inches,

    - a wide end with an outer diameter of .24 to .26 inches;

- and being .13 to .17 in. long, to thereby form a tapered at an angle of 86 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;

- a first annular pipette tip stop between and abutting and being coaxial with the first and second sealing zones, and further:
  - being substantially perpendicular to the axis defining the first and second conically tapered sealing zones; and
  - having an inner diameter equal to the wide end of the first sealing zone and an outer diameter equal to the narrow end of the second sealing zone;
- a second annual pipette tip stop abutting the second sealing zone, the second stop:
  - being perpendicular to the axis defining the first and second conically tapered sealing zones,
  - having an inner diameter equal to the wide end of the second sealing zone.

3. A pipette comprising:

- a pipette tip ejector axially movable with respect to a pipette tip mounting shaft,
- the pipette tip mounting shaft comprising:
  - a first conically tapered sealing zone, the first sealing zone comprising
    - a narrow end with an outer diameter of 0.25 to 0.28 inches,
    - a wide end with an outer diameter of 0.28 to 0.30 inches;

- and being 0.13 to 0.15 in. long, to thereby form a tapered at an angle of 84 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;

- a second conically tapered sealing zone, the second sealing zone being coaxial with the first sealing zone and comprising
  - a narrow end with an outer diameter of 0.30 to 0.32 inches,
  - a wide end with an outer diameter of 0.32 to 0.34 inches;
  - and being 0.15 to 0.17 in. long, to thereby form a tapered at an angle of 86 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;

- a first annular pipette tip stop between and abutting and being coaxial with the first and second sealing zones, and further:
  - being substantially perpendicular to the axis defining the first and second conically tapered sealing zones; and
  - having an inner diameter equal to the wide end of the first sealing zone and an outer diameter equal to the narrow end of the second sealing zone;

- a second annual pipette tip stop abutting the second sealing zone, the second stop:
  - being perpendicular to the axis defining the first and second conically tapered sealing zones,
  - having an inner diameter equal to the wide end of the second sealing zone.

4. A pipette comprising:

- a pipette tip ejector axially movable with respect to a pipette tip mounting shaft,
- the pipette tip mounting shaft comprising:
    - a first sealing zone, comprising
        - upper and lower ends, and
        - which is at an angle of 84 to 90 degrees with respect to the plane perpendicular to the axis of the first sealing zone;
    - a second sealing zone being coaxial with the first sealing zone and comprising
        - upper and lower ends and,
        - which is at an angle of 84 to 90 degrees with respect to the plane perpendicular to the axis of the second sealing zone;
    - a first annular pipette tip stop between and abutting and being coaxial with the first and second sealing zones, and further:
        - being substantially perpendicular to the axis defining the first and second conically tapered sealing zones; and
        - having an inner diameter equal to the top end of the first sealing zone and an outer diameter equal to the lower end of the second sealing zone;
    - a second annual pipette tip stop abutting the second sealing zone, the second stop:
        - being perpendicular to the axis defining the first and second conically tapered sealing zones, and
        - having an inner diameter equal to the top end of the second sealing zone.